

In addition, the present invention is not limited to the embodiments described above, and it can be changed appropriately in the scope of technology concept of the present invention.

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1 **What is claimed is:**

- 2 1. A manufacturing method of an active matrix
3 substrate comprising the steps of:
4 a film lamination step for depositing a plurality
5 of films to form laminated films on an insulating
6 substrate;
7 a resist pattern formation step for forming a
8 resist pattern having a plurality of film
9 thicknesses on said laminated films;
10 a first etching step for etching said laminated
11 films using said resist pattern as a first etching
12 mask;
13 a resist etching step for etching said resist
14 pattern to remove a thinner portion of said resist
15 pattern ; and
16 a second etching step for etching said laminated
17 films using a remaining portion of said resist
18 pattern left after said resist etching process as a
19 second etching mask.
20 2. The manufacturing method of an active matrix
21 substrate according to claim 1, further comprising
22 a step of forming a first conductive film pattern
23 on said insulating substrate before said film

24 lamination step in which an insulation layer, a
25 semiconductor film, an ohmic semiconductor film and
26 a second conductive film are deposited in order
27 covering said first conductive film pattern to form
28 said laminated films, whereinsaid resist pattern is
29 formed so as to have a first portion of said resist
30 pattern thicker than a second portion and said
31 second portion of said resist pattern with an
32 opening therein, at least top two films of said
33 laminated films in said opening are etched and
34 removed in said first etching step, said resist
35 pattern is etched to remove said second portion in
36 said resist etching step, at least an uppermost
37 film of said laminated films is etched and removed
38 in said second etching step, and after said resist
39 etching step, a contact hole formation step for a
40 remaining films of said laminated films in said
41 opening left is etched and removed to form a
42 contact hole in said insulation layer reaching a
43 surface of said first conductive film pattern.

44 3. The manufacturing method of an active matrix
45 substrate according to claim 2, wherein said first
46 conductive film pattern is a gate wiring including
47 a gate electrode, and after said contact hole
48 formation step, further comprising a lead wiring
49 formation step for removing said resist pattern,
50 depositing a third conductive film on said
51 insulating, forming a wiring formation resist
52 pattern on said third conductive film, etching and

53 removing said third conductive film together with
54 upper films constituting said laminated films and
55 locating higher than said semiconductor film by
56 using said wiring formation resist pattern as a
57 third etching mask to form source/drain electrodes
58 consisting of said third conductive film and said
59 upper films, and to form a lead wiring covering
60 said contact hole.

1 4. The manufacturing method of an active matrix
2 substrate according to claim 3, wherein any one of
3 said source/drain electrodes is connected with said
4 lead wiring of said third conductive film.

5 5. The manufacturing method of an active matrix
6 substrate according to claim 3, wherein said lead
7 wiring constitutes a terminal electrode to be
8 connected with an external device in periphery of
9 said insulating substrate.

10 6. The manufacturing method of an active matrix
11 substrate according to claim 1, wherein said
12 thinner portion of said resist pattern is etched by
13 anisotropic etching using active species that are
14 generated by plasma-enhancing a halogen compound
15 gas and an oxygen gas.

16 7. The manufacturing method of an active matrix
17 substrate according to claim 1, wherein said resist
18 pattern has a plurality of film thicknesses and is
19 formed by exposing a resist film once through a
20 photomask with a mask pattern consisting of a light

21 shielding portion, a light half-transmitting
22 portion and a light transmitting portion, and
23 developing said resist film.

24 8. The manufacturing method of an active matrix
25 substrate according to claim 7, wherein said resist
26 film consists of two resist films laminated having
27 different exposure sensitivity from each other.

28 9. The manufacturing method of an active matrix
29 substrate according to claim 1, wherein said resist
30 pattern has a plurality of film thicknesses which
31 is formed by exposing sequentially a resist film by
32 using a photomask selected from photomasks with
33 different mask patterns from each other for each
34 exposure, and developing said resist film.

35 10. The manufacturing method of an active matrix
36 substrate according to claim 9, wherein said each
37 exposure is executed by using different amount of
38 exposure light from each other.

39 11. The manufacturing method of an active matrix
40 substrate according to claim 9, wherein said resist
41 film consists of two resist films laminated having
42 different exposure sensitivity from each other.